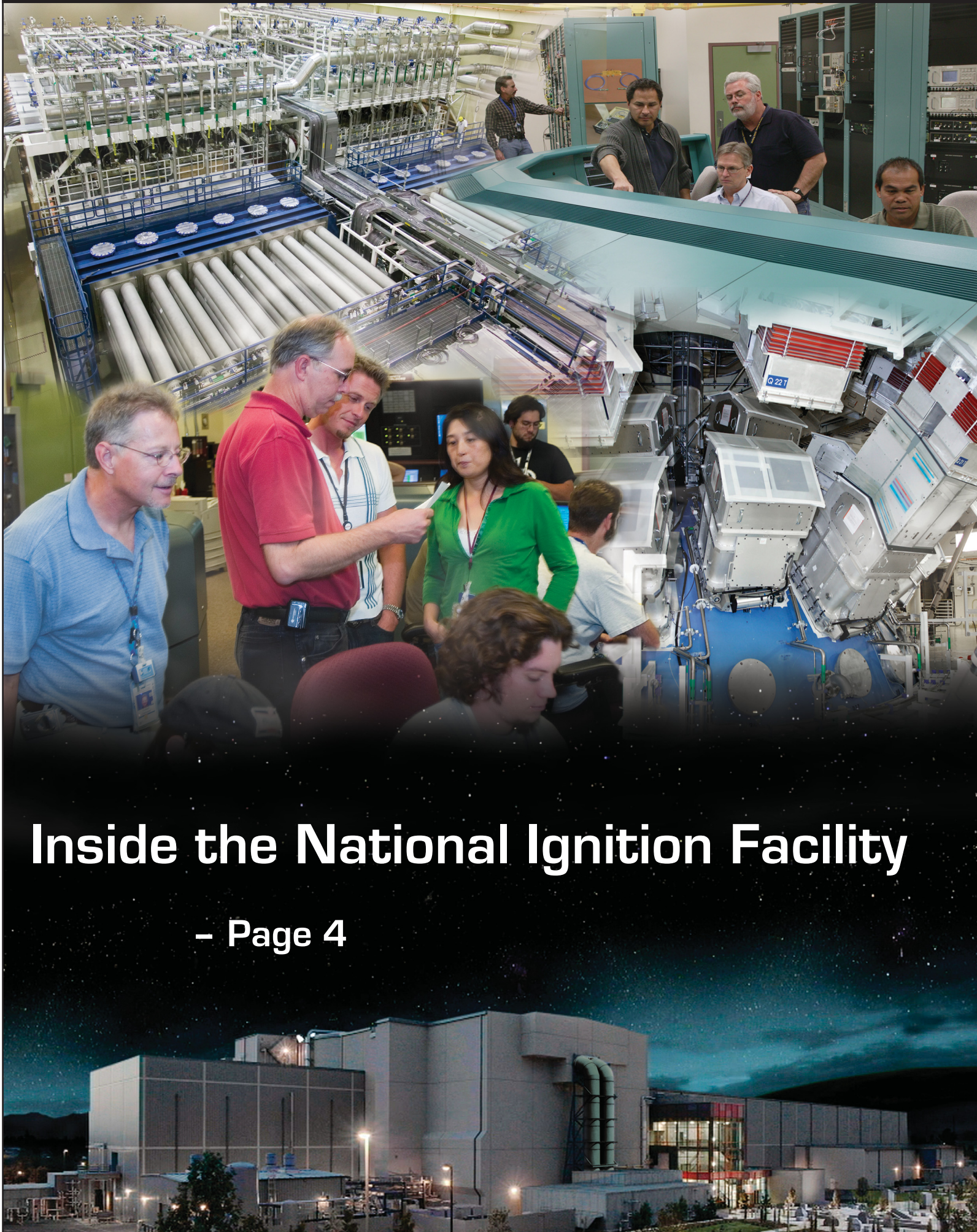


# NEWSLINE

Published for the employees of Lawrence Livermore National Laboratory

January 19, 2007

Vol. 32, No. 2



## Inside the National Ignition Facility

– Page 4

### What's INSIDE



HONORING THE  
2006 R&D 100  
WINNERS

PAGE 2



SINGING THE  
PRAISES OF  
MARTIN LUTHER  
KING JR.

PAGE 3



GRACE CLARK  
NAMED IEEE  
FELLOW

PAGE 8



LAB NEWS

# 2006 ‘Oscar of invention’ winners honored

In 2006, LLNL researchers won more R&D 100 awards than any other institution in the United States. On Jan. 10, they celebrated — and were celebrated — for their award-winning efforts during a ceremony in Bldg. 453’s Armadillo Room.

Cherry Murray, the Laboratory’s deputy director for Science and Technology, substituted for Director George Miller and presented the researchers’ awards to six teams and one individual LLNL researcher.

Murray’s praise of the Lab scientists and engineers was echoed by Camille Yuan-Soo Hoo, the Livermore site office manager for the National Nuclear Security Administration, and by Roger Werne, the chief technologist for the Lab’s Industrial Partnerships and Commercialization Office.

“This is a very prestigious award,” Murray said. “Livermore won seven this year.

“It’s really astounding what’s been done. I personally looked at all of the award packets and I was blown away by the technology. What the Lab does best is science and engineering and getting technology out into the field.”

Yuan-Soo Hoo noted that through recent years “LLNL has continued to win multiple R&D 100 awards each year.”

“It really is very special, listening to Cherry read off the winners in terms of the actual work — it almost sounds like the Academy Awards. It’s a tremendous effort on the part of all of you in cooperation with your teams,” Yuan-Soo Hoo added.

For his part, Werne said that the purpose of the awards ceremony was “to celebrate your accomplishments and recognize what you have done.”



NANCY RUTTER/TID

From left, Bill Goldstein, associate director for Physics and Advanced Technologies, David Erskine, R&D 100 winner, Cherry Murray, deputy director for Science and Technology, and Camille Yuan-Soo Hoo, manager of the NNSA Site Office at LLNL.

Livermore’s 2006 R&D 100 award total matches the Laboratory’s previous record number of seven awards (also achieved in 1987, 1988, 1997 and 1998). With last year’s awards, the Laboratory has now captured a total of 113 awards since 1978.

Like other R&D 100 award winners, the LLNL recipients were honored during an Oct. 19 black-tie dinner in the Grand Ballroom of Chicago’s Navy Pier.

LLNL teams and one individual LLNL researcher won awards for:

- An explosive detector known as ELITE, the Easy Livermore Inspection Test for Explosives, that can be used by airport screeners, military personnel and others to detect more than 30 different explosives.
- A new high-precision radiation detector called UltraSpec that operates at very low temperatures and could assist security officials in identifying even small amounts of nuclear material.
- The creation of the Sonoma Persistent Surveillance System, which offers the first integrated, broad-area, high-resolution, real-time motion imagery system for surveillance applications.
- A high-average-power wavelength conversion device that can change the “color” of laser light, permitting large-aperture high-average-power lasers to operate at half the wavelength of the laser crystal’s natural emission wavelength.

• A technique called “Externally Dispersed Interferometry” to conduct precision measurements of the Doppler velocities of stars or sunlit targets.

• Analysis algorithms allowing the exploration of large, complex and multidimensional data sets. The technology has been dubbed Sapphire.

• A tool called Babel addresses the problem computer scientists face in developing simulation codes that have language incompatibilities among the software libraries they must use.

## D’Agostino named NNSA acting administrator after Brooks resigns

Tom D’Agostino was named acting administrator of the National Nuclear Security Administration (NNSA) earlier this month after Secretary of Energy Samuel Bodman announced the resignation of Ambassador Linton Brooks.

Prior to his appointment by President Bush, D’Agostino served as NNSA deputy administrator for Defense Programs. “Tom’s highly valued experience has proven to be a critical asset as we continue to transform our nuclear weapons stockpile,” Bodman said. “He is very familiar with the inner workings of our Labs and I believe he will bring the same brand of steadfast leadership to the Office of the Administrator.”

Before coming to NNSA, D’Agostino served as a program manager at the Naval Sea Systems Command. He received his bachelor’s degree from the U.S. Naval Academy and his master’s degrees from John Hopkins University and the Naval War College.

Bodman announced Brooks’ resignation Jan. 4 citing “serious management and security issues” at the national labs. “It is now critical that we move forward and achieve long term results to correct and prevent similar issues in the future,” the energy secretary said.

Bodman said his decision represented “careful consideration and concern for our obligation to serve the President and the

American people in all matters, especially those pertaining to our national security.”

Bodman lauded Brooks as “an extremely dedicated and highly skilled public servant. I have appreciated and benefited from his tremendous intellect, vast experience, and wise counsel.”

In a message to NNSA employees, Bodman said: “You are all well aware of the tremendous significance of what you do — and the pivotal national value of NNSA’s mission. During this time of transition, Tom and I — and more importantly, the American people — are counting on you to continue to perform with the same sense of urgency and professionalism for which you have become known.”

LAB NEWS

## Celebrating Martin Luther King



JACQUELINE MCBRIDE/NEWSLINE

The Laboratory celebrated the life of Martin Luther King Jr. on Wednesday. Keynote speaker Horace Mitchell (above), president of California State University, Bakersfield and a leader in education presented, “Honoring Our Past and Creating Our Future.” The Dominion A Cappella Ensemble performed. The presentation was sponsored by the Director’s Office, Administration and Human Resource Directorate and the Work-Life Center.

## Call for proposals for FY08 Laboratory Directed R&D competition

The invitation to submit proposals for the FY08 Laboratory Directed Research and Development Laboratory-Wide (LW) competition has been issued.

The LW category, which emphasizes innovation from individual researchers, is one of the four components of the LDRD Program, which is the Laboratory’s primary means for enabling investigation of high-risk concepts. It is open to all Laboratory programmatic, scientific, engineering and technical staff. An LW project is typically funded for one to three years at up to \$225,000 per year. The deadline for submitting LW proposals to the Laboratory Science & Technology Office (LSTO) is close of business, Monday, Feb. 12.

All LW proposals are reviewed by the LDRD LW Research Committee, which is composed of about 20 active scientists and engineers, representing all Laboratory directorates and technical competencies. Because of the large number of proposals submitted in the LW category, written proposals must be concise and of the highest quality. Note that proposals are restricted to six pages maximum, and the quality should be similar to that of proposals submitted to competitions for funding by agencies such as the National Science Foundation or DOE Office of Science.

The following criteria are used to evaluate the written proposals: scientific and technical quality of the proposed research; feasibility given the time, funds, and facilities available; research significance; quality of the principal investigator and

team as a whole; return to the Laboratory and DOE; and prospects for future follow-on research.

Informational workshops on how to prepare and submit an LW proposal will be held 9 to 10:30 a.m. today (Jan. 19) and on Friday, February 2 from 10:30 a.m. to noon in Bldg. 123, Conference Room A. A complete LW proposal package consists of the proposal form, a three- to six-page written proposal, and a curriculum vitae for the principal investigator and each co-investigator and university collaborators.

Investigators should mail one hard copy of their proposal package to Nancy Campos at L-002 and also e-mail the package to campos1@llnl.gov.

Information about submittals, including proposal guidance, the Web-based proposal form, and the review process, is available on the LSTO Website at <https://lsto.llnl.gov/Proposals/ProposalHome.pl> under FY08 Lab-Wide Proposals.

Questions can be directed to Nancy Campos at 2-9805.

### Call for Proposals for FY08 LDRD Strategic Initiatives

The invitation to submit proposals for the FY08 LDRD Strategic Initiative (SI) category has also been issued. The SI is one of the four categories comprising the LDRD Program and emphasizes innovative, high-payoff R&D activities to develop new directions for existing programs, explore new concepts, and extend the Laboratory’s science and technology foundations.

The SI competition is open to all Laboratory programmatic, scientific, engineering, and technical staff. The deadline for submitting proposals for both currently funded and new SIs to the Laboratory Science & Technology Office (LSTO) is close of business, Friday, April 27.

The FY08 process for submitting new SI proposals begins with a three-page pre-proposal that provides a summary of the objectives, goals, and potential benefits of the proposed work, the project’s principal investigator and team, and the requested funding.

The pre-proposal should be submitted to LSTO through the investigator’s directorate office by close of business, Friday, February 23. The pre-proposals will be reviewed to select those that will go forward to the next step in the process.

Full proposals should not exceed 25 pages and should include an abstract, background and significance, detailed discussion of FY07 accomplishments (for continuing projects), research design and methods, and specific proposed goals for FY08 and beyond.

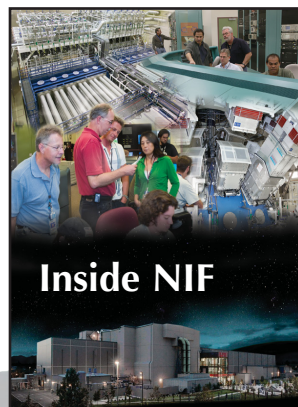
Detailed information about submittals, including proposal guidance and the review process, is available on the LSTO Website at <https://lsto.llnl.gov/Proposals/ProposalHome.pl> under FY08 Strategic Initiatives, or by contacting Nancy Campos at 2-9805, or through your directorate point of contact.

Check the Web or *NewsOnLine* for a list of directorate LDRD contacts.





The upper hemisphere of the NIF target chamber. Final optics will be installed into their positions starting later this year.



Inside NIF

ON THE COVER: CLOCKWISE FROM LEFT: ONE OF NIF'S TWO LASER BAYS; MASTER OSCILLATOR ROOM IS WHERE THE LASER BEAM BEGINS ITS JOURNEY THROUGH THE FACILITY; NIF'S LASERS ENTER THE TARGET CHAMBER IN GROUPS OF FOUR BEAMS PER ENTRY PORT; EXTERIOR OF THE NIF FACILITY AT NIGHT; CONTROL ROOM STAFF DISCUSS THE LATEST ENHANCEMENTS TO THE INTEGRATED COMPUTER CONTROL SYSTEM.

# Inside the National Ignition Facility

By Bob Hirschfeld  
Newsline staff writer

For most people, December is a month filled with holiday spirit, and anticipation of family, friends, and feasts. But for the National Ignition Facility (NIF), December was a hectic month, filled with record-breaking accomplishments, and the achievement of important milestones. As NIF Programs Associate Director Ed Moses explained, "NIF will soon provide capabilities for a new age of science in high energy density physics. We are excited about the progress that we have made and are on track for another great year."

The huge laser project is not scheduled to begin full-scale fusion experiments until 2010. But as equipment continues to be installed, test shots are conducted almost daily. NIF's 192 beams are evenly split among two 400-foot long rooms designated Laser Bays. Each of the two Laser Bays is further subdivided into two sets of 48 beams, each known as a cluster.

On Dec. 7, Cluster 3 in Laser Bay 2 was the first to become operationally qualified. All 48 beams within the cluster were fired simultaneously, with all subsystems participating to test end-to-end functionality. In the process, NIF became the world's most energetic laser facility, the first to achieve over a MegaJoule of infrared laser energy. Joules are a measurement of energy. The facility has now been demonstrated to have the capability of achieving 4.2 MegaJoules in the infrared. For comparison, LLNL's Nova laser typically operated just over one-percent of this energy output.

Most of NIF's test shots are extremely short, lasting just a few billionths of a second (nanoseconds). Some of the December shots utilized a bundle of eight laser beams to test NIF's so-called "long-pulse" capability, with shots lasting 25 nanoseconds. This type of shot will be used for High Energy Density (HED) experiments in support of the Stockpile Stewardship Program and for basic science experiments to explore such topics as the origin and make-up of the planets.

Another important achievement in December involved NIF's automated shot controls. The Integrated Computerized Control System (ICCS) was able to fire the entire shot cycle for Cluster 3's 48 beams including shot set up, data archiving, shot data analysis and post-shot amplifier cooling in just over three hours. This is the same time previously completed for a single bundle shot cycle and demonstrates scaling of the controls to full NIF capability.

For NIF, the New Year begins with significant momentum.

The facility has just begun around the clock operations Sunday through Friday, in preparation to eventually becoming a 24/7 operating user facility.

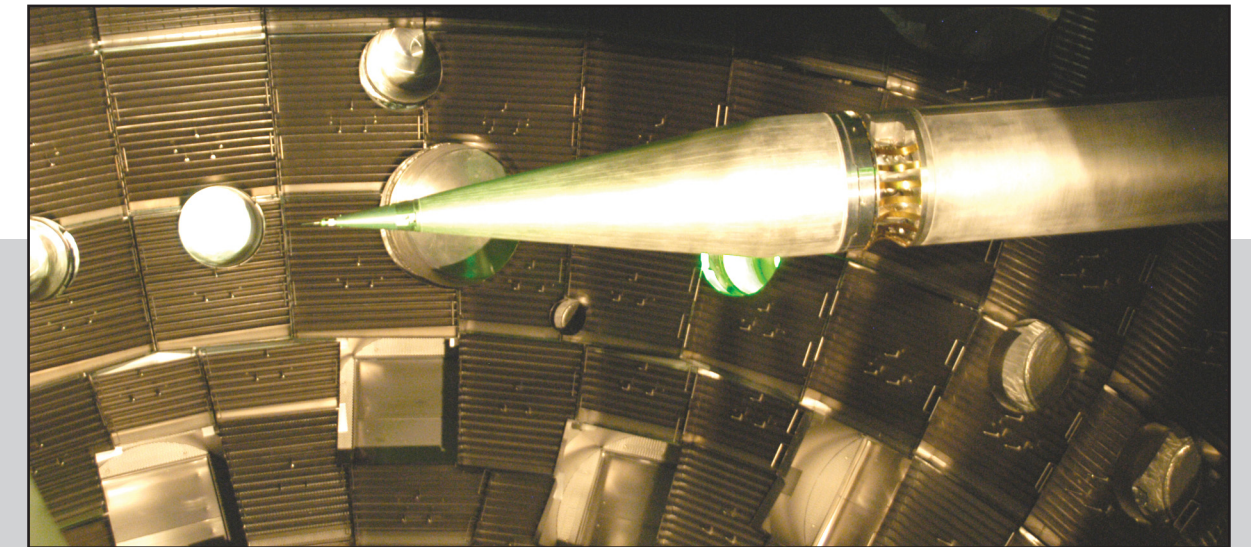
As of Jan. 3, NIF is nearly 90 percent complete, with over 3,200 of its 6,200 optical/electro-mechanical modules — known as line replaceable units (LRUs) — installed.

All of the LRUs in the NIF core comprising the Master Oscillator Room (MOR) where the laser beam originates, and the computer room have been installed.

Photos by  
Bob Hirschfeld, Public Affairs



Line Replaceable Unit (LRU) being moved into position by a robotic automated guided vehicle for installation in beamline.



A retractable target positioner extends to the center of the NIF target chamber.

## A look at NIF's target technology

As the National Ignition Facility heads toward completion, the enormity of the project has become apparent. Almost everything about it is huge. Its twin laser bays are each 400 feet long, amplifying beams that are about 16 inches square. The 33-foot diameter target chamber consists of a million pounds of concrete and aluminum.

But NIF's business end — the ignition capsule target — is tiny: just two mm in diameter.

NIF researchers in Bldg. 298, as well as colleagues in the Chemistry, Materials, and Life Science directorate, and at General Atomics in San Diego, are working with the target physics community to develop laser fusion targets. They are refining techniques to achieve the optimal conditions necessary for the physics of fusion to succeed.

"We're advancing a number of technologies and processes for the National Ignition Campaign (the program to achieve thermonuclear burn at NIF)," said Jeff Atherton, deputy associate director for NIF Science and Technology. "This includes tailoring the way we coat the capsules to ensure proper composition, density, and uniformity of the shells."

These capsules are positioned inside a small (one cm long) canister known as a hohlraum inside the cavernous NIF target chamber. The 192 laser beams enter the hohlraum from top and bottom creating X-rays that heat the capsule to temperatures as high as those within the sun. This creates incredible pressures that compress the fuel contained inside the capsule, forcing the atoms inside to fuse together while releasing a tremendous burst of energy.

For years, LLNL laser systems such as Nova utilized targets whose shell was a type of plastic similar to polystyrene (the material used for packing peanuts and coffee cups).

Now, the research is moving toward using beryllium, which can ignite more efficiently.

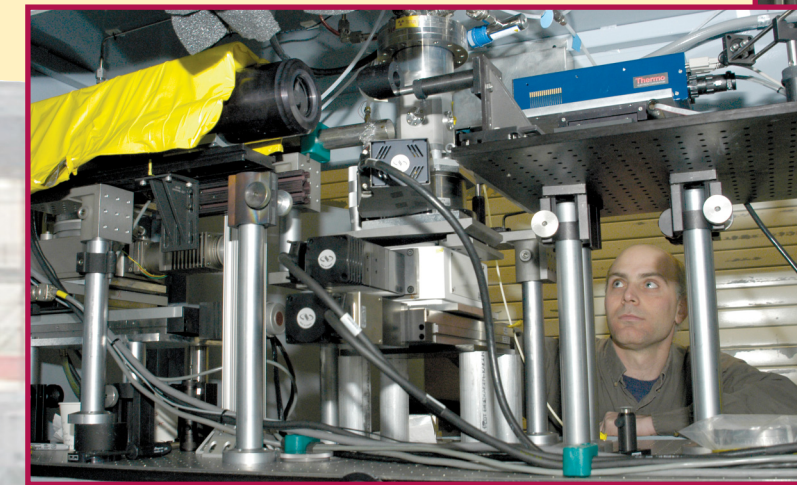
Evan Mapoles, associate program leader for NIF Integrated Target Systems, said "Beryllium has several advantages for ignition, but only if you can get it right. The team's progress to date is impressive."

Bldg. 298 houses several complex sputtering machines. Sputtering is a coating process that allows beryllium to be deposited on shells in a thin uniform layer. These machines run 24/7, coating about a dozen shells simultaneously.

Filling the tiny target with a liquid mixture of deuterium and tritium is another major effort underway in the Bldg. 298 labs. The fuel will be slowly condensed into the shell through a fill tube that is only about 10 microns in diameter. By comparison, the average human hair is about 50 microns thick.

Once inside, the liquid is frozen at just above 18 degrees Kelvin, or -427 Fahrenheit. Eventually the entire filling and freezing process will be done at the NIF target chamber in preparation for National Ignition Campaign ignition shots.

— Bob Hirschfeld



Experimental physicist Bernie Kozioziemski prepares a cryogenic refrigeration system used to study the deuterium-tritium fuel layer formed inside the target capsule.



Chemist Steve Letts operates one of the coaters in Bldg. 298 used to make prototype capsules for the National Ignition Campaign.



# I.WANT ADS

**Automobiles**

15"; VW hupcap. \$22 925-846-5060. 925-846-5060

1950-51 Willys Overland Jeepster 2 door convertible. Located in Tracy; 209-835-9240

1955 Chevy Bel Air. Price negotiable starting at \$24,000. 209-968-9236

1962 Austin Mini Cooper. \$5500 Located in Ceres. 209-568-7479

1965 Mustang, Asking \$3000 or best offer. 925-373-7842

1969VW Bus. (located in Manteca) 925.784.7398

1987 Honda CRX. \$3000 OBO. 209-838-0304

1987 Toyota Camry CX 4 door. \$1550. 925-456-8723

1991 Accura Integra GS. \$2700 925-606-7389.

1991 Mazda RX-7 Convertible. \$800 or best offer. 925-484-3827

1995 Ford Bronco 4 x 4 Eddie Bauer. (925) 606-1286

1995 Volvo 960 Sedan. 925-443-7434

1996 Acura Integra LS sedan. (510) 657-2343

1996 Dodge Intrepid. \$3250. 443-5213

1997 BMW 318i Convertible. \$9,000. 209-836-5252

1998 Honda Accord EX.V. Asking \$5800 obo. 209-518-0539

1998 Toyota Tacoma. \$7000. 925-455-4852

1999 Ford Explorer. \$9000 firm. 925-447-9353

2 Ton Engine Hoist, 100 bucks (or cheaper if you pick up in Tracy). 707-315-2118

2000 Jeep Grand Cherokee Ltd.. \$13,000. 925 381-7378.

2000 Lexus ES300 Sedan. \$15,500 or Best Offer. (510) 339-1707 evenings after 6:30 PM.

2000 New Beetle, \$6988, 925-200-1155

2000 Volvo V70 SE. 925-253-4945

2002 Mercedes C23 Kompressor Coupe. \$15,500 OBO. 408-592-5625.

2003 Civic Si. \$15,500. 209-835-6351 or 209-629-1665(cell)

2003 Chevrolet Tracker. Asking \$12,900. 925-447-5633

2003 Denali. All reasonable offers considered. 925-634-2362/(H)925-813-2167/C

2003 Honda Accord. \$18,000. 209-835-6261

2003 Lexus IS300 Sport Design Edition. \$22,995 OBO. 925-371-1093

2004 Pontiac GTO. 925-447-5633

2004 VW Jetta 1.8T \$11,500 obo, Call 209-505-6956.

2005 Acura TSX. \$22,500 OBO. (209) 602-8080

2005 Honda S2000 - \$24,000. 925.895.1861

2005 Volvo S40. \$20K 209-823-3848

2006 Chevy Aveo. 209-652-7055

2006 Ford Mustang GT (Premium Ed.). Want \$24,500 - 209-599-0123

20-in Chrome Rims and Tires. \$1000.00. Cash only 925-487-9891

Acura 2002 RSX 66K Miles. \$14K OBO. 925-989-1159

BMW 2001 525i. \$18,500. 925-292-9215

Buick LeSabre Limited 2000. \$6500 209 823 2219, 925 423 1146

Chevy Blazer. \$8500. Call 925-443-6271.

Edelbrock Letterman Jacket - I am asking \$100.00. 925-447-2068

Honda Civic Si Hatch Back, \$2500/OBO, (925) 833-6076

1990 Volvo , \$1000 or best offer. 209-957-3601

Jeep 1985 CJ-7. \$2,900 OBO. (925) 371-1854

Intake Manifold. \$450.00. 925.455.0859

1955 willys 4x4 wagon. \$1500 obo. 209-480-7107

Limited Edition 2001 Mustang GT. Come see it and we'll discuss a price. 209-830-0112

1999 Blk Ford Mustang GT Limited Edition, \$7000 OBO. Contact (209) 612-8510 if interested.

Nissan Sentra Limited Edition, 2003, \$11,000. 925-447-2508

PT Accessories, Wheels, and Tire Package. (209) 249-0429

Toyota Prius \$21,000. 925-354-0314 before 7:00PM

Truck, 1993 Ford Ranger extended cab w/ camper, \$2000. 925-443-5213

**Bicycles**

Bicycle trailer / double stroller \$75 454-8827

Bike child trailer, Yakima Caddyak \$250 obo. . 925 455-1437

Boys 20" Trek bicycle. \$75. 925-606-0755

Girls 12"; Pink Diamondback bike , asking \$50. 925-455-4208

Mountain Bike, 2003 Rotec-Downhill Mountain Bike. Asking price \$1,600 (925) 325-2975

Road bike, Titus aluminum frame 55 cm. \$1100. 925-200-0849

Schwinn LeTour Men's 10 speed road bike. \$75.00. 925-447-8086

Womans ten speed bike. \$15.00 or best offer. Call 925-455-0408 after 6:00 pm

WANTED- used road bike - 56cm (women's) or 54cm (men's). 846-8394

**Boats**

12" Sea king (WARDS) Alum. boat w two motors. \$900 obo. 209-239-7103

14"; Aluminum Boat 707-315-2118

260 Mercruiser outdrive.\$1000.. 925.455.0859

Skeeter Starfire Bass Boat \$2500. 209-824-2177

**Cameras**

Film Camera, APS format, \$50. 510 226 7440

Camera lens \$95. 925-377-6537

Canon EF 17-40mm f/4L USM Lens. \$600. 925-846-3653

Canon s300 Digital Camera. \$75. 925.876.6434

Cingular HTC 8125 PDA (209) 483-8719

Dell Axim X5 Pocket PC.N ow asking \$400 or best offer. 209-879-3123

Denon Tuner. \$30 OBO. 925-449-5481

Duron 1.4Mhz computer \$40. 449-4993

Electronic grab bag, I'm cleaning out years of electronics 209-833-6452

Entertainment center & 27" TV -

Due to the high quantity of ads and space limitations, these want ads have been abbreviated. For the complete ad listings, refer to the internal Website: <http://www-r.llnl.gov/pao/news/wantads.html> or for the latest pdf download and retiree information, see the external Website: <http://www.llnl.gov/pao/employee/>.  
**Date of ads: Approx. Jan. 9 to Jan. 16.**  
**Ads now appear on the Web for seven days.**

\$200 firm for both. 925-462-9072

Furuno Marine Radar. \$600.00. 925.455.0859

HP Scan Jet Ilex. \$50. Call 510-582-0780.

icom pcr-100. \$100. 925 337 5622

iMac computer. \$85. 209 604-1025

ipod USB to AC adapter. \$20. 925-931-1876

Kodak Digital Camera C643/Printer G600. NIB - \$180. Willing to trade straight across for new in box Sony External DVD Burner for a Mac Model DRX-830U/T. 925-743-0876

Old MP3 Player \$35. 925-640-5469

Panoramic Head. \$275. 510 226 7440

Rebel XT EOS digital SLR camera. 925-577-0174

RSL Speakers. 209 545-3839

Sony PSP. \$250. 209.612.2579

Sony Trinitron 21" monitor \$40. 449-4993

Speakers \$25. 925-640-5469

Stereo Speakers GNP Lead Cylinder. \$350/offer. (209) 544-6411

TI-83 Graphing Calculator. \$40. 510-481-1983

**Electronic Equipment**

1930 Majestic Floor Model AM Radio. Free. 447-2844

32" Hitachi TV. \$100.00. 925-373-0751

C band dish antenna & receiver. \$150. 925 447-2224

**Giveaway**

2 Pairs of ski's: Elan 167cm, Fisher 157cm. 415-519-6186

ClutterLess Self Help Group Meetings -Mondays Pleasanton. We meet EVERY MONDAY 7:00 to 8:30 pm . 925-297-9246

Couch for take away. 925/960-1590

2 parakeets. 925-606-6155

Free: Netherland dwarf rabbit. 925-606-6155

Health Rider Aerobic Rider 2. 510-582-0780.

Free large Jacuzzi brand hot tub. 925-443-6722

bee keeping equipment: two smokers, veil, pith helmet and frame grabbers, queen excluders etc. 447- 8138

Old stockings for homemade stuffed toys. 925-449-6911

Parakeet blue and gray with cage feeders toys etc. 447-2321

Queen Mattress & Box Spring. 925-640-6553

Sailboard and sails. 925-449-6911

Very affectionate and playful 5-year-old indoor cat . 455-4598

**Household**

52 in TV. \$1700.00. 209-808-9992

Amana referigerator, \$250/OBO. 925-876-5188

New, Ronco/Showtime Rotisserie Oven & BBQ. \$55.00 / OBO 925-449-8806

Ashley Dining Room Collection, asking \$750.00 for all. (925) 321-4735

Beechwood salad bowls and server. \$30.00. 925-876-5188

Broan Range Hood, \$75.00. 925-447-8086

Bunk bed. \$25. 925.828.6737

Bunk Bed w/Full-Size Futon on Bottom. \$175/OBO 925-455-1306

Bunk/Twin Beds. \$50.00 or best offer. Call 925-455-0408 after 6:00 pm M-F

Cal King Mattress, Serta brand; asking \$250 obo. 925-422-2578 (day) 925-447-4721 (eve)

CalKing Simmins box spring. \$95 OBO. 925-373-9276

Child's Bedroom Set, \$525. 925-361-4491

China Cabinet - Danish Modern looking \$125. 925-803-5804

Climate Cooler, Bonaire, FREE. Call 510-582-0780

Corner Curio cabinet. \$200.00 209-786-5967

Couch & Loveseat & Coffee Table. \$150 for both; 925-449-3499

Couch, Gray 8ft \$20. 925-989-1159

Old Oak Desk. \$80. 925-634-0868

Diaper Genie. \$10.00. 925-876-5188

Dining Set \$350. 925-640-5469

double bed & mattress set. \$50 OBO. Practically new double mattress and box spring - \$150 OBO. 925 245-0915

Solid Wood Windsor Kitchen \$200.00. 447-4370

Kreepy Krawly Pool Sweep. Yours for \$380 firm. 209-836-3839

Lenox Pencil Santa Figurines. \$200 for all or \$30 each. 925/373-7025

Maple twin bed frame, night stand and student desk. \$50.00 for all. 209 985-4476 or 209 599-7955

Microwave Oven - \$50 obo. 925/200-2543

New Bathroom Vanity. Asking \$170 OBO. 925-989-7439

Oak/glass/brass coffee table - \$300.00 or b/o. 449-1128

Office Refrigerator \$50.00 obo. Cell #234-2223, 925-240-7374

White pedestal bathroom , \$50 . 846-2903

Queen Futon 209-832-7301

Queen Size Bed Set, \$120; 925-487-9891

Ragazzi crib and matching dresser with hutch Crib \$300, dresser \$500, or both \$750, 925-462-1160

Roll Top Desk \$800. 925-443-1279

Rolling File Drawers \$35. 925-6405-4669

Santa Fe Style Buffet And Hutch. \$500/OBO. 925-876-5188

Shutters, Door -Wood w/white paint. \$200.00 O.B.O. 925-443-7729

Sofa and Love Seat. \$300.00. 925-413-2938

Vacuum Cleaner Bags. \$5 925-454-9253

Whirlpool washer & (gas) dryer. 209 545-3839

Washer and Dryer, \$100. Whirlpool large capacity electric dryer, in good working condition, \$35.00. 209 985-4476 or 209 599-7955

white 3-drawer dresser, \$30. 925-876-5188

**Lost and Found**

Found: glasses. Holding in pid Sgt's office.

Lost Cat on Moving Day. Lost at 6469 El Capitan in Livermore on 12/28. 925-321-2749

Found: Stainless steel travel coffee mug. (925) 423-1363

**Miscellaneous**

1972 King Coolpinball machine. 925-855-8368

Antique Fishing Lures. 209-914-2132

Batman Slip N Slide. \$10. 925-648-0671

Black Walnut Slab - \$150 obo. 925 447-8557

Bookshelves Ladder Style \$80 and \$65 one regular unit and one corner unit. 925-640-5469

Frederick Ramond Chandeliers I am asking \$1000 for the pair, or make an offer. 209-836-5252

Furniture: Teak tv cabinet \$40; 70s sewing cabinet \$70; Rolling file drawers \$30; Dining table and chairs \$300; ladder shelves \$145. 925-443-3102

Futon Couch Bed Combo. \$150. 925-373-7025

GE Gas Dryer-Extra Large Capacity. \$200. 925-337-4499

Girls Twin Sleigh Bed and Mattress set. \$500.00. 925-443-5008

Glider rocker. \$85 OBO. 925-373-9276

Hall Tree, Pulaski Victorian \$250/OBO 209-836-1455

Hutch \$1,500. 925-373-7025

Kirby Gsix Vacuum. Asking \$500, or make an offer.. 209-836-5252

LPs For Sale. Classic R&R, Country and others. 209 545-3839

Pomegranates and/or Local Honey. \$1 ea. all 20 for \$10. 925 447-8557

QUEEN Comforter w/Bedskirt, Shams and Curtains--\$35; TWIN Comforter w/Bedskirt, Shams & Panel Curtains--\$60. 925-640-5469

Snugtop Tonneau Cover. 450.00 or BO. (925)757-2166

Table saw, Craftsman . \$50. 925 846-4733

Tire Chains. 10 each. 925-443-1074

TMX Tickle me Elmo 10th Anniversary Special Edition. \$50. 209-329-3900

Tools: Jet cabinet saw, sacta fence, 220V motor, 2HP, 50 inch extension table, rolling base. \$1500/OBO 925-449-3900

Tow Behind 42" Mower. \$450 Evenings (209) 463-0457, 209 463-0457

Twin Mattress, \$30/OBO, 925-455-1306

**Motorcycles**

02 Yamaha YZF426, 209-505-6956

1978 R100RS BMW, 209-526-6272

1979 Suzuki RM 125 N. 209-338-8869

1984 Harley XR100. \$15,000. 209-836-4361

2001 V Star 1100 Classic. \$4995.00 OBO, 209-499-3793

2001 Warrior 350 ATV, Asking \$ 2500. 209-368-4286

2002 Kawasaki Kx65. \$1700 925-754-6390

2004 Yamaha YZ85, \$1950.00 obo. 925-625-7914

2005 Honda CRF-230, \$2200.00, 925-640-2782

2006 ATV for sale or trade. I would be willing to trade the Raptor350+cash for a Raptor700. 925-525-8338

2006 HD Screamin' Eagle Ultra Classic 209-612-2843 or 209-815-1210. \$33K OBO.

2006 Honda CRF150F, \$3k or OBO, 209-772-1730

San Francisco/Oakland vanpool 415-621-5065

Vanpool from Modesto, 209-521-9047

Montclair Oakland Vanpool. 510 531-4399

Vanpool - Leaves from Briggsmore and Rose @ 6:30, Ripon, (209) 544-6411

Vanpool from Modesto needs riders 209-576-0217

Walnut Creek Carpool 925-946-9796

Honda 50, \$2K OBO 209-351-0547

Honda CRF-50, \$1,150.00 or BO (925)757-2166

**Musical Instruments**

Brian Setzer Signature Gretsch, \$1500. 209-836-4361

Carpool opening- Lafayette, Moraga, Orinda, 925-433-9823

Looking to start or join a carpool from Newark/Union City area 510 744-1160

Castro Valley Vanpool 925-368-7654

El Cerrito - Berkeley Vanpool 510-524-5769

Modesto Carpool, 209-402-6245

Modesto-Ripon Vanpool (209) 544-6411

Montclair/Oakland Vanpool 510-531-4399

Patterson Vanpool 209-895-4447

1980 Carpool to/rom Ripon 209-599-0922

Carpool opening- Lafayette, Moraga, Orinda, 925-433-9823

Looking to start or join a carpool from Newark/Union City area 510 744-1160

Modesto Room for Rent 510-432-2279

Modesto Room for Rent, 209-521-9047

Mountain House Room, 209-835-1012

Private room/dwelling over garage, North Livermore, 925-455-5702

Room for rent in Livermore off Vasco Road. 925-455-4849

Room for Rent, Tracy: (209) 835-8249

**Pets**

2 1/2 yr old Black Female Adorable Lap Cat for Adoption, 925-980-3035

3 legged young male cat for adoption/Speedy is a special boy who was born with 3 legs. 925-980-3035

AKC Yorkies. 209-931-2121.

Border Collie Free to good home, 209-824-2177

Yellow Lab., \$800. 209-366-2354

Free parakeets, 925-606-6155

Hay ,Native Grass, \$4.75/bale or bulk pricing @ 50 bales. 925-455-1776

Horse for sale, \$6000. 925-961-1196

Kittens for Adoption, 925-961-0260

Large dog house and Metal cage, \$40. Large metal transport cage, ~ 2.5'L x 2.5'H x 2'W, \$25. 209.836.4550

Light Cream Male Pomeranian, Small \$100 adoption fee will be refunded to you upon dental cleaning verification. 650-714-1612

Parakeets \$5 each. 510-487-7641.

Lab Puppies available (Yellow & Black), \$1000.00 (925) 325-2975

Young Cats - Free to Good Home(s) 650-714-1612

**Recreation Equipment**

Box/Flex, \$600 call 209-244-8241

Downhill skis + poles + boots. All for \$175 obo. 925/422-4500

Elliptical trainer \$120, (925) 454-8827

Golf club loft & Lie machine. \$300.00 Tracy, 209-835-6662

Kemper Snowboard, \$60. 925-455-4484

Kids Ski Equipment, \$35; Blue Bieffe Ski Helmet Size 54-55. \$10 925-454-9253

Nordic Track 220, (925) 443-9830

NordicTrack Double Stroller / Bike Trailer \$75 925-454-8827

Paintball Marker Asking \$250 firm. 209-838-0304

Rossignol Women's Ski Boots: 925-423-7093.

Scotty Downriggers, \$100.00, 209-918-9225

Skjs 2 pairs, 415-519-6186

Snowboard Boots men's size 10.5, \$110. 925-373-2832

Snowboard Boots New Size 5 Boys \$30, 925-462-3055

Snowboard boots Airwalk, Size 8 men's, \$50. 925-600-1817

Tennis rackets, 925-838-9302

The Original Health Club Step Bench System 925-243-1398

Weights/Exercise Equipment: One Ianko brand barbell \$80; One pair of Ianko brand dumbbells \$40; misc. weights. 925-640-5469

**Ridesharing**

980 Carpool to/rom Ripon 209-599-0922

Carpool opening- Lafayette, Moraga, Orinda, 925-433-9823

Looking to start or join a carpool from Newark/Union City area 510 744-1160

Castro Valley Vanpool 925-368-7654

El Cerrito - Berkeley Vanpool 510-524-5769

Modesto Carpool, 209-402-6245

Modesto-Ripon Vanpool (209) 544-6411

Montclair/Oakland Vanpool 510-531-4399

Patterson Vanpool 209-895-4447

1987 Mazda B2600 Cab-Plus 4x4 \$3200 obo 925-423-7501

1988 Chevrolet Suburban \$2400 or Best Offer. (209) 599-1059

1997 Chevy Z71 4WD pick up \$6800 OBO 209-968-9236

1998 DODGE RAM QUAD- CAB 4x4 9258765588

1998 Jeep Wrangler \$11,500 or Best Offer 209 815-4127

1998 Toyota Tacoma \$7000 925-455-4852

2001 F250 Diesel Asking 20,500. 925 525-3578.

# RETIREEES' CORNER

**Jackie (ME, MFTF) and Alan Mode (Chemistry/Lasers/NAI 2000)** with granddaughter Brittany spent Thanksgiving week in Anchorage, Ala. visiting their daughter and family. This is an annual trip, but this year was special in that two granddaughters got to play together for a week. While Anchorage is usually covered with snow at this time of year, the weath-er this year was “frigid” and “dangerously cold” according to the National Weather Service; high for the week was 7 degrees Fahrenheit, the low was -9 degrees, and the wind chill was -29 degrees. Everyone spent a lot of time inside. A special treat was that the cold, clear air allowed them to see Denali (Mt. McKinley) from Anchorage — a distance of about 200 miles.

**Fritz Frick (Mechanical Engineering, 1993)** and his wife, Regina, made their annual trip to Ulm, Germany. Fritz's home town. They visited family and friends and enjoyed the food and beer. Ulm has the highest Church-Steeple in the World (161 meters) and as you may know, is also the birthplace of Albert Einstein. They sent a postcard from Ulm telling us they would miss the September retirees' luncheon.

The **travel group** will have their first meeting on Jan. 23 at 2 p.m. in the Livermore Police Community Room. The topic is

entitled, “Central America: Mayans to the Present,” by Arlene and Stephen Chin. They meet on the fourth Tuesday of each month from January through June.

*Newsline* is resuming its classified ad service and has set up a system to enable retirees to submit ads from off-site. A link to the *Newsline* want ad form for retirees will be posted on the retiree organization's Website (<http://www.llnlretirees.org/home.html>). See accompanying article on this page.

The retirees' luncheon was held on Wed., Jan. 17 at the Elks Club in Livermore. The speaker, Ted Kaye, chief executive officer of the Las Positas College Foundation, talked about Las Positas College.

The newly elected officers for the Retirees' Association for 2007 are: Jeff Garberson, chairman; Dana Richards, vice-chair; Harold Pfeifer, secretary; and Bob Hickman, treasurer. If you are not yet a member and would like to become a member, go to our Web page ([www.llnlretirees.org](http://www.llnlretirees.org)) and print out an application.

We hope everyone had a great holiday season. Remember us during the year, and send any input to Jane or Gus Olson. E-Mail: AugustO@aol.com or JaneRubert@aol.com. Phone: (925) 443-4349, address: 493 Joyce St., Livermore, CA 94550.

San Francisco/Oakland vanpool 415-621-5065

Vanpool from Modesto, 209-521-9047

Montclair Oakland Vanpool. 510 531-4399

Vanpool - Leaves from Briggsmore and Rose @ 6:30, Ripon, (209) 544-6411

Vanpool from Modesto needs riders 209-576-0217

Walnut Creek Carpool 925-946-9796

Room w/ private bath for rent 510-290-2263

Room for rent, Manteca, (209) 239-8841

SHARE APARTMENT, 1/2 mile from work, (925)548-7711

**Trailers**

Trail Lite Trailer , 209-835-8266

2006 Forest River Cherokee 5th wheel, 209-321-1506

Motorcycle Trailer, \$500 925-525-8338

**Trucks**

1985 Jeep CJ-7 \$2,900 OBO. 925.371.1854

1987 Mazda B2600 Cab-Plus 4x4 \$3200 obo 925-423-7501

1988 Chevrolet Suburban \$2400 or Best Offer. (209) 599-1059

1997 Chevy Z71 4WD pick up \$6800 OBO 209-968-9236

1998 DODGE RAM QUAD- CAB 4x4 9258765588

1998 Jeep Wrangler \$11,500 or Best Offer 209 815-4127

1998 Toyota Tacoma \$7000 925-455-4852

2001 F250 Diesel Asking 20,500. 925 525-3578.

Room w/ private bath for rent 510-290-2263

Room for rent, Manteca, (209) 239-8841

SHARE APARTMENT, 1/2 mile from work, (925)548-7711

**Trailers**

Trail Lite Trailer , 209-835-8266

2006 Forest River Cherokee 5th wheel, 209-321-1506

Motorcycle Trailer, \$500 925-525-8338

**Trucks**

1985 Jeep CJ-7 \$2,900 OBO. 925.371.1854

1987 Mazda B2600 Cab-Plus 4x4 \$3200 obo 925-423-7501

1988 Chevrolet Suburban \$2400 or Best Offer. (209) 599-1059

1997 Chevy Z71 4WD pick up \$6800 OBO 209-968-9236

1998 DODGE RAM QUAD- CAB 4x4 9258765588

1998 Jeep Wrangler \$11,500 or Best Offer 209 815-4127

1998 Toyota Tacoma \$7000 925-455-4852

2001 F250 Diesel Asking 20,500. 925 525-3578.

2002 Chevrolet Silverado \$15,900 or Best Offer (209)814-1322

2002 F150 XLT Super Cab \$16,000 925-371-8111

2002 Toyota Tundra \$19.5k 925-784-1768

2003 Custom Chevy Silverado \$25,500 925-456-5681

2005 GMC YUKON \$40,000 OBO (209) 845-0699

4x4 Mud & Snow Truck Tire Paid \$150, sell for \$75. 925/200-2543

72 chevy stepside 925-373-3429

GMC Sierra Extended Cab \$7500.00 or best offer 209-872-2622

2003 Dodge Ram P/U \$15,750 925-449-1961

**Vacation Rentals**

Arnold area - 925-254-1114

Homewood area in Tahoe 925-813-2597

Maui, HI 1BR/1BA condominium. 925-449-0761

North



# Electronics problem solver honored by IEEE

By Charles Osolin  
Newsline staff writer

Grace Clark, an electrical engineer in the Lab's Engineering Directorate, enjoys doing theoretical research that has practical applications.

In 1978, while working on her Ph.D. dissertation research, she saw the need to make adaptive filters less computationally demanding. Adaptive filters are electronic devices that automatically adjust to time-varying signal and noise environments such as telephone channels. Many applications require very large filters, and this results in great computational complexity and processing speeds that are far too slow for real-time applications.

Clark hit on the idea of breaking the incoming signal into "blocks" containing multiple samples of the signal, and she proposed a new adaptive filter algorithm that adjusts only once per signal block instead of every time a new signal sample arrives. Clark said she proved that a block adaptive filter "could be designed to have the same convergence and error reduction properties of a conventional adaptive filter, but with dramatically reduced computational complexity." Clark's approach makes adaptive filtering practical for many applications in which it was previously not practical.

"I like to look at real problems and find something that really needs to be solved, and then do theoretical work to solve it," Clark said. "That's exactly what I did in this particular piece of work, and it's exactly what I've



Grace Clark

done at the Laboratory all these years. It's what really motivates me in my career — I get a big kick out of it."

As a result of her pioneering contributions to adaptive filtering, Clark has been elevated to the grade of Fellow by the Institute of Electrical and Electronics Engineers (IEEE). Fellow status is conferred by the organization's Board of Directors upon IEEE members with an extraordinary record of accomplishments in any of the IEEE fields of interest. The total number of fellows selected in any one year does not exceed one-tenth of one percent of the worldwide IEEE voting membership. Fewer than two percent of the organization's 365,000 members hold the grade of Fellow, and Clark is one of only three IEEE fellows currently at LLNL.

Since Clark published her research results in the 1980's, block adaptive filters have been used extensively in a wide variety of applications that require

medium-sized to large filters and real-time operation. Her publications creating the fundamental theory of block adaptive filtering spawned a fruitful new research area that has led to hundreds of papers extending the original work. This remains an active research area today, and at least ten textbooks include chapters or sections dedicated to block adaptive filtering. In 1999, two IEEE Signal Processing Society publications on "Celebrating a Half Century of Signal Processing" cited the important contributions of block adaptive filtering. The titles were "Recent Developments in the Core of Digital Signal Processing" and "Highlights of Signal Processing Education."

Block adaptive filters are used for such things as channel equalization, echo canceling, and multi-path sup-

pression in ground-based and satellite communication systems; array processing; and target recognition. They suppress the distortion and echoes caused by telephone wires and long-distance wireless communications channels, as well as the acoustic echoes that occur during teleconferencing. They also filter out distortions and other undersea noises to enhance the detection of sounds made by submarines. Companies that have developed block adaptive filtering products include Motorola, Applied Signal Technology (AST), Argo Systems, ESL, Adaptive Digital Systems Inc. and DSP Creations Ltd.

Before coming to LLNL, Clark was employed by the Caltech Jet Propulsion Laboratory. She joined the Laboratory in 1974 with BSEE and MSEE degrees from the Purdue University Electrical Engineering Honors Program. LLNL supported her Ph.D. dissertation research through the University of California, Santa Barbara.

"I am very grateful to LLNL for supporting my Ph.D. research," Clark said, "and I am delighted that the work I loved doing has had a positive impact upon the engineering world."

Clark now works in the areas of signal/image processing, estimation/detection, and pattern recognition applied to acoustics, electromagnetics and particle physics. She has held the positions of principal investigator, technology leader, program leader, and engineering thrust area leader for remote sensing, imaging and signal engineering.

Clark has served on the technical/thesis committees of three MS and two Ph.D. students at UC Davis. She has contributed more than 150 technical publications and teaches a course at LLNL on digital signal and image processing. She is a member of the Acoustical Society of America, the Society of Exploration Geophysicists, Sigma Xi and Eta Kappa Nu. She also serves as a reviewer for a variety of technical journals.



## Defense Science Board visits Lab

The National Ignition Facility's Bob Kaufmann shows the inside of the NIF target chamber to members of the Threat Reduction Advisory Committee Task Force of the Defense Science Board. Members of the board visited the laser facility for briefings on X-ray effects testing at OMEGA and the NIF, and on NIF as a user facility.



JACQUELINE MCBRIDE/NEWSLINE

Newsline  
UC-LLNL  
PO Box 808, L-797  
Livermore, CA 94551-0808